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INTRODUCTION TO THE OUTLINES OF A SYSTEM OF NATURAL PHILOSOPHY;

OR,

ON THE IDEA OF SPECULATIVE PHYSICS AND THE INTERNAL ORGANIZATION OF A SYSTEM OF THIS SCIENCE.

1799.

[Translated from the German of SCHELLING, by TOM DAVIDSON.]

I.

WHAT WE CALL NATURAL PHILOSOPHY IS A NECESSARY SCIENCE IN THE SYSTEM OF KNOWING.

The Intelligence is productive in two modes—that is, either blindly and unconsciously, or freely and consciously;—unconsciously productive in external intuition, consciously in the creation of an ideal world.

Philosophy removes this distinction by assuming the unconscious activity as originally identical, and, as it were, sprung from the same root with the conscious; this identity is by it *directly* proved in the case of an activity at once clearly conscious and unconscious, which manifests itself in the productions of genius, *indirectly*, outside of consciousness, in the products of *Nature*, so far as in them all, the most complete fusion of the Ideal with the Real is perceived.

Since philosophy assumes the unconscious, or, as it may likewise be termed, the real activity as identical with the conscious or ideal, its tendency will originally be to bring back everywhere the real to the

ideal—a process which gives birth to what is called Transcendental Philosophy. The regularity displayed in all the movements of Nature—for example, the sublime geometry which is exercised in the motions of the heavenly bodies—is not explained by saying that Nature is the most perfect geometry; but conversely, by saying that the most perfect geometry is what produces in Nature;—a mode of explanation whereby the Real itself is transported into the ideal world, and those motions are changed into intuitions, which take place only in ourselves, and to which nothing outside of us corresponds. Again, the fact that Nature, wherever it is left to itself, in every transition from a fluid to a solid state, produces, of its own accord, as it were, regular forms—which regularity, in the higher species of crystallization, namely, the organic, seems to become purpose even; or the fact that in the animal kingdom—that product of the blind forces of Nature—we see actions arise which are equal in regularity to those that take place with consciousness, and even external works of art, perfect in their kind;—all

this is not explained by saying that it is an unconscious productivity, though in its origin akin to the conscious, whose mere reflex we see in Nature, and which, from the stand-point of the natural view, must appear as one and the same blind tendency, which exerts its influence from crystallization upwards to the highest point of organic formation (in which, on one side, through the art-tendency, it returns again to mere crystallization) only acting upon different planes.

According to this view, inasmuch as Nature is only the visible organism of our understanding, Nature can produce nothing but what shows regularity and design, and Nature is compelled to produce that. But if Nature can produce only the regular, and produces it from necessity, it follows that the origin of such regular and design-evincing products must again be capable of being proved necessary in Nature, regarded as self-existent and real, and in the relation of its forces;—*that therefore, conversely, the Ideal must arise out of the Real, and admit of explanation from it.*

If, now, it is the task of Transcendental Philosophy to subordinate the Real to the Ideal, it is, on the other hand, the task of Natural Philosophy to explain the Ideal by the Real. The two sciences are therefore but one science, whose two problems are distinguished by the opposite directions in which they move; moreover, as the two directions are not only equally possible, but equally necessary, the same necessity attaches to both in the system of knowing.

II.

SCIENTIFIC CHARACTER OF NATURAL PHILOSOPHY.

Natural Philosophy, as the opposite of Transcendental Philosophy, is distinguished from the latter chiefly by the fact that it posits Nature (not, indeed, in so far as it is a product, but in so far as it is at once productive and product) as the self-existent; whence it may be most briefly designated as the Spinozism of Physics.

It follows naturally from this that there is no place in this science for idealistic methods of explanation, such as Transcendental Philosophy is fitted to supply, from the circumstance that for it Nature is nothing more than the organ of self-consciousness, and everything in Nature is necessary merely because it is only through the medium of such a Nature that self-consciousness can take place; this mode of explanation, however, is as meaningless in the case of physics, and of our science which occupies the same stand-point with it, as were the old teleological modes of explanation, and the introduction of a universal reference to final causes into the thereby metamorphosed science of Nature. For every idealistic mode of explanation, dragged out of its own proper sphere and applied to the explanation of Nature, degenerates into the most adventurous nonsense, examples of which are well known. The first maxim of all true natural science, viz., to explain everything by the forces of Nature, is therefore accepted in its widest extent in our science, and even extended to that region, at the limit of which all interpretation of Nature has hitherto been accustomed to stop short; for example, to those organic phenomena which seem to pre-suppose an analogy with reason. For, granted that in the actions of animals there really is something which pre-supposes such analogy, on the principle of realism, nothing further would follow than that what we call reason is a mere play of higher and necessarily unknown natural forces. For, inasmuch as all thinking is at last reducible to a producing and reproducing, there is nothing impossible in the thought that the same activity by which Nature reproduces itself anew in each successive phase, is reproductive in thought through the medium of the organism (very much in the same manner in which, through the action and play of light, Nature, which exists independently of it, is created immaterial, and, as it were, for a second time), in which circumstance it is natural that what forms the limit of our intuitive faculty, no longer falls within the sphere of our intuition itself.

III.

NATURAL PHILOSOPHY IS SPECULATIVE PHYSICS.

Our science, as far as we have gone, is thoroughly and completely realistic; it is therefore nothing other than Physics, it is only *speculative* Physics; in its tendency it is exactly what the systems of the ancient physicists were, and what, in more recent times, the system of the restorer of Epicurean philosophy is, viz., Lesage's Mechanical Physics, by which the speculative spirit in physics, after a long scientific sleep, has again, for the first time, been awakened. It cannot be shown in detail here (for the proof itself falls within the sphere of our science), that on the mechanical or atomistic basis which has been adopted by Lesage and his most successful predecessors, the idea of speculative physics is incapable of realization. For, inasmuch as the first problem of this science, that of inquiring into the *absolute* cause of motion (without which Nature is not in itself a finished whole), is absolutely incapable of a mechanical solution, seeing that mechanically motion results only from motion *ad infinitum*, there remains for the real construction of speculative physics only one way open, viz., the dynamic, which lays down that motion arises not only from motion, but even from rest; that, therefore, there is motion in the rest of Nature, and that all mechanical motion is the merely secondary and derivative motion of that which is solely primitive and original, and which wells forth from the very first factors in the construction of a nature generally (the fundamental forces).

In hereby making clear the points of difference between our undertaking and all those of a similar nature that have hitherto been attempted, we have at the same time shown the difference between speculative physics and so-called empirical physics; a difference which in the main may be reduced to this, that the former occupies itself solely and entirely with the original causes of motion in nature, that is, solely with the dynamical phenomena; the latter, on the contrary, inasmuch as it never reaches a final source of motion in nature,

deals only with the secondary motions, and even with the original ones only as mechanical (and therefore likewise capable of mathematical construction). The former, in fact, aims generally at the inner spring-work and what is *non-objective* in Nature; the latter, on the contrary, only at the *surface* of Nature, and what is objective, and, so to speak, *outside* in it.

IV.

ON THE POSSIBILITY OF SPECULATIVE PHYSICS.

Inasmuch as our inquiry is directed not so much upon the phenomena of Nature as upon their final grounds, and our business is not so much to deduce the latter from the former as the former from the latter, our task is simply this: to erect a science of Nature in the strictest sense of the term; and in order to find out whether speculative physics are possible, we must know what belongs to the possibility of a doctrine of Nature viewed as science.

(a) The idea of knowing is here taken in its strictest sense, and then it is easy to see that, in this acceptation of the term, we can be said to know objects only when they are such that we see the principles of their possibility, for without this insight my whole knowledge of an object, e. g. of a machine, with whose construction I am unacquainted, is a mere seeing, that is, a mere conviction of its existence, whereas the inventor of the machine has the most perfect knowledge of it, because he is, as it were, the soul of the work, and because it pre-existed in his head before he exhibited it as a reality.

Now, it would certainly be impossible to obtain a glance into the internal construction of Nature, if an invasion of Nature were not possible through freedom. It is true that Nature acts openly and freely; its acts however are never isolated, but performed under a concurrence of a host of causes, which must first be excluded if we are to obtain a pure result. Nature must therefore be compelled to act under certain definite conditions, which either do not exist in it at all, or else exist only as modified by others.—Such an invasion of Nature we call an experiment. Every experiment is a question put to Nature, to which she is

compelled to give a reply. But every question contains an implicit *à priori* judgment; every experiment that is an experiment, is a prophecy; experimenting itself is a production of phenomena. The first step, therefore, towards science, at least in the domain of physics, is taken when we ourselves begin to produce the objects of that science.

(b) We know only the self-produced; knowing, therefore, in the *strictest* acceptance of the term, is a *pure* knowing *à priori*. Construction by means of experiment, is, after all, an absolute self-production of the phenomena. There is no question but that much in the science of Nature may be known comparatively *à priori*; as, for example, in the theory of the phenomena of electricity, magnetism, and even light. There is such a simple law recurring in every phenomenon that the results of every experiment may be told beforehand; here my knowing follows immediately from a known law, without the intervention of any particular experience. But whence then does the law itself come to me? The assertion is, that all phenomena are correlated in one absolute and necessary law, from which they can all be deduced; in short, that in natural science all that we know, we know absolutely *à priori*. Now, that experiment never leads to such a knowing, is plainly manifest, from the fact that it can never get beyond the forces of Nature, of which itself makes use as means.

As the final causes of natural phenomena are themselves not phenomenal, we must either give up all attempt ever to arrive at a knowledge of them, or else we must altogether put them into Nature, endow Nature with them. But now, that which we put into Nature has no other value than that of a pre-supposition (hypothesis), and the science founded thereon must be equally hypothetical with the principle itself. This it would be possible to avoid only in one case, viz., if that pre-supposition itself were involuntary, and as necessary as Nature itself. Assuming, for example, what must be assumed, that the sum of phenomena is not a mere world, but of necessity a Nature—that is, that this whole is not merely a

product, but at the same time productive, it follows that in this whole we can never arrive at absolute identity, inasmuch as this would bring about an absolute transition of Nature, in as far as it is productive, into Nature as product, that is, it would produce absolute rest; such wavering of Nature, therefore, between productivity and product, will, of necessity, appear as a universal duplicity of principles, whereby Nature is maintained in continual activity, and prevented from exhausting itself in its product; and universal duality as the principle of explanation of Nature will be as necessary as the idea of Nature itself.

This absolute hypothesis must carry its necessity within itself, but it must, besides this, be brought to empiric proof; for, inasmuch as all the phenomena of Nature cannot be deduced from this hypothesis as long as there is in the whole system of Nature a single phenomenon which is not necessary according to that principle, or which contradicts it, the hypothesis is thereby at once shown to be false, and from that moment ceases to have validity as an hypothesis.

By this deduction of all natural phenomena from an absolute hypothesis, our knowing is changed into a construction of Nature itself, that is, into a science of Nature *à priori*. If, therefore, such deduction itself is possible, a thing which can be proved only by the fact, then also a doctrine of Nature is possible as a science of Nature; a system of purely speculative physics is possible, which was the point to be proved.

Remark.—There would be no necessity for this remark, if the confusion which still prevails in regard to ideas perspicuous enough in themselves did not render some explanation with regard to them requisite.

The assertion that natural science must be able to deduce all its principles *à priori*, is in a measure understood to mean that natural science must dispense with all experience, and, without any intervention of experience, be able to spin all its principles out of itself—an affirmation so absurd that the very objections to it deserve pity.

Not only do we know this or that through experience, but we originally know nothing at all except through experience, and by means of experience, and in this sense the whole of our knowledge consists of the data of experience. These data become *à priori* principles when we become conscious of them as necessary, and thus every datum, be its import what it may, may be raised to that dignity, inasmuch as the distinction between *à priori* and *à posteriori* data is not at all, as many people may have imagined, one originally cleaving to the data themselves, but is a distinction made solely *with respect to our knowing*, and the *kind* of our knowledge of these data, so that every datum which is merely historical for me—i. e. a datum of experience—becomes, notwithstanding, an *à priori* principle as soon as I arrive, whether directly or indirectly, at insight into its internal necessity. Now, however, it must in all cases be possible to recognize every natural phenomenon as absolutely necessary; for, if there is no chance in nature at all, there can likewise be no original phenomenon of Nature fortuitous; on the contrary, for the very reason that Nature is a system, there must be a necessary connection for everything that happens or comes to pass in it, in some principle embracing the whole of Nature. Insight into this internal necessity of all natural phenomena becomes, of course, still more complete, as soon as we reflect that there is no real system which is not, at the same time, an organic whole. For if, in an organic whole, all things mutually bear and support each other, then this organization must have existed as a whole previous to its parts—the whole could not have arisen from the parts, but the parts must have arisen out of the whole. *It is not, therefore, we know Nature, but Nature is, à priori*, that is, everything individual in it is predetermined by the whole or by the idea of a Nature generally. But if Nature is *à priori*, then it must be possible to recognize it as something that is *à priori*, and this is really the meaning of our affirmation.

Such a science, like every other, does

not deal with the hypothetical, or the merely probable, but depends upon the evident and the certain. Now, we may indeed be quite certain that every natural phenomenon, through whatever number of intermediate links, stands in connection with the last conditions of a Nature; the intermediate links themselves, however, may be unknown to us, and still lying hidden in the depths of Nature. To find out these links is the work of experimental research. Speculative physics have nothing to do but to show the need of these intermediate links;* but as every new discovery throws us back upon a new ignorance, and while one knot is being loosed a new one is being tied, it is conceivable that the complete discovery of all the intermediate links in the chain of Nature, and therefore also our science itself, is an infinite task. Nothing, however, has more impeded the infinite progress of this science than the arbitrariness of the fictions by which the want of profound insight was so long doomed to be concealed. This fragmentary nature of our knowledge becomes apparent only when we separate what is merely hypothetical from the pure out-come of science, and thereupon set out to collect the fragments of the great whole of Nature again into a system. It is, therefore, conceivable that speculative physics (the soul of real experiment) has, in all time, been the mother of all great discoveries in Nature.

V.

OF A SYSTEM OF SPECULATIVE PHYSICS GENERALLY.

Hitherto the idea of speculative physics has been deduced and developed; it is another business to show how this idea must be realized and actually carried out.

The author, for this purpose, would at

* Thus, for example, it becomes very clear through the whole course of our inquiry, that, in order to render the dynamic organization of the Universe evident in all its parts, we still lack that central phenomenon of which Bacon already speaks, which certainly lies in Nature, but has not yet been extracted from it by experiment. [Remark of the Original. Compare below, third note to "General Remark."]

once refer to his Outlines of a System of Natural Philosophy, if he had not reason to suspect that many even of those who might consider those Outlines worthy of their attention, would come to it with certain pre-conceived ideas, which he has not pre-supposed, and which he does not desire to have pre-supposed.

The causes which may render an insight into the tendency of those Outlines difficult, are (exclusive of defects of style and arrangement) mainly, the following :

1. That many persons, misled perhaps by the word *Natural Philosophy*, expect to find transcendental deductions from natural phenomena, such as, in different fragments, exist elsewhere, and will regard natural philosophy generally as a part of transcendental philosophy, whereas it forms a science altogether peculiar, altogether different from, and independent of, every other.

2. That the notions of dynamical physics hitherto diffused, are very different from, and partially at variance with, those which the author lays down. I do not speak of the modes of representation which several persons, whose business is really mere experiment, have figured to themselves in this connection; for example, where they suppose it to be a dynamical explanation, when they reject a galvanic fluid, and accept instead of it certain vibrations in the metals; for these persons, as soon as they observe that they have understood nothing of the matter, will revert, of their own accord, to their previous representations, which were made for them. I speak of the modes of representation which have been put into philosophic heads by Kant, and which may be mainly reduced to this: that we see in matter nothing but the occupation of space in definite degrees, in all difference of matter, therefore, only mere difference of occupation of space (i. e. density,) in all dynamic (qualitative) changes, only mere changes in the relation of the repelling and attracting forces. Now, according to this mode of representation, all the phenomena of Nature are looked at only on their lowest plane, and the dynamical physics of these philoso-

phers begin precisely at the point where they ought properly to leave off. It is indeed certain that the last result of every dynamical process is a changed degree of occupation of space—that is, a changed density; inasmuch, now, as the dynamical process of Nature is one, and the individual dynamical processes are only shreds of the one fundamental process—even magnetic and electric phenomena, viewed from this stand-point, will be, not actions of particular materials, but changes in the constitution of matter itself; and as this depends upon the mutual action of the fundamental forces, at last, changes in the relation of the fundamental forces themselves. We do not indeed deny that these phenomena at the extreme limit of their manifestation are changes in the relation of the principles themselves; we only deny that these changes are nothing more; on the contrary, we are convinced that this so-called dynamical principle is too superficial and defective a basis of explanation for all Nature's phenomena, to reach the real depth and manifoldness of natural phenomena, inasmuch as by means of it, in point of fact, no qualitative change of matter *as such* is constructible (for change of density is only the external phenomenon of a higher change). To adduce proof of this assertion is not incumbent upon us, till, from the opposite side, that principle of explanation is shown by actual fact to exhaust Nature, and the great chasm is filled up between that kind of dynamical philosophy and the empirical attainments of physics—as, for example, in regard to the very different kinds of effects exhibited by simple substances—a thing which, let us say at once, we consider to be impossible.

We may therefore be permitted, in the room of the hitherto prevailing dynamic mode of representation, to place our own without further remark—a procedure which will no doubt clearly show wherein the latter differs from the former, and by which of the two the Doctrine of Nature may most certainly be raised to a Science of Nature.

VI.

INTERNAL ORGANIZATION OF THE SYSTEM OF
SPECULATIVE PHYSICS.

1.

An inquiry into the Principle of speculative physics must be preceded by inquiries into the distinction between the speculative and the empirical generally. This depends mainly upon the conviction that between empiricism and theory there is such a complete opposition that there can be no third thing in which the two may be united; that, therefore, the idea of Experimental Science is a mongrel idea, which implies no connected thought, or rather, which cannot be thought at all. What is pure empiricism is not science, and, *vice versa*, what is science is not empiricism. This is not said for the purpose of at all depreciating empiricism, but is meant to exhibit it in its true and proper light. Pure empiricism, be its object what it may, is history (the absolute opposite of theory), and, conversely, history alone is empiricism.*

Physics, as empiricism, are nothing but a collection of facts, of accounts of what has been observed—what has happened under natural or artificial circumstances. In what we at present designate physics, empiricism and science run riot together, and for that very reason they are neither one thing nor another.

Our aim, in view of this object, is to separate science and empiricism as soul and body, and by admitting nothing into science which is not susceptible of an *a priori* construction, to strip empiricism of all theory, and restore it to its original nakedness.

The opposition between empiricism and science rests therefore upon this: that the

* If only those warm panegyrists of empiricism, who exalt it at the expense of science, did not, true to the idea of empiricism, try to palm off upon us as empiricism their own judgments, and what they have put into nature, and imposed upon objects; for though many persons think they can talk about it, there is a great deal more belonging to it than many imagine—to eliminate purely the accomplished from Nature, and to state it with the same fidelity with which it has been eliminated.—*Remark of the Original.*

former regards its object in *being*—as something already prepared and accomplished; science, on the other hand, views its object in *becoming*, and as something that has yet to be accomplished. As science cannot set out from anything that is a product—that is, a thing—it must set out from the unconditioned; the first inquiry of speculative physics is that which relates to the unconditioned in natural science.

2.

As this inquiry is, in the Outlines, deduced from the highest principles, the following may be regarded as merely an illustration of those inquiries:

Inasmuch as everything of which we can say that it *is*, is of a conditioned nature, it is only *being itself* that can be the unconditioned. But seeing that individual being, as a conditioned, can be thought only as a particular limitation of the productive activity (the sole and last substrate of all reality) *being itself* is *thought* as the same productive activity in its *unlimitedness*. For the philosophy of nature, therefore, nature is originally only productivity, and from this as its principle science must set out.

So long as we know the totality of objects only as the sum of being, this totality is a mere world—that is, a mere product for us. It would certainly be impossible in the science of Nature to rise to a higher idea than that of being, if all permanence (which is thought in the idea of being) were not deceptive, and really a continuous and uniform reproduction.

In so far as we regard the totality of objects not merely as a product, but at the same time necessarily as productive, it rises into *Nature* for us, and this *identity of the product and the productivity*, and this alone is implied, even in the ordinary use of language by the idea of Nature.

Nature as a mere product (*natura naturata*) we call Nature as object (with this alone all empiricism deals). Nature as productivity (*natura naturans*) we call Nature as subject (with this alone all theory deals).

As the object is never unconditioned, something absolutely non-objective must

be put into Nature; this absolutely non-objective is nothing else but that original productivity of Nature. In the ordinary view it vanishes in the product: conversely in the philosophic view the product vanishes in the productivity.

Such identity of the product and the productivity in the original conception of Nature is expressed by the ordinary views of Nature as a whole, which is at once the cause and the effect of itself, and is in its duality (which goes through all phenomena) again identical. Furthermore, with this idea the identity of the Real and the Ideal agrees—an identity which is thought in the idea of every product of Nature, and in view of which alone the nature of art can be placed in opposition thereto. For whereas in art the idea precedes the act—the execution—in Nature idea and act are rather contemporary and one; the idea passes immediately over into the product, and cannot be separated from it.

This identity is cancelled by the empirical view, which sees in Nature only the effect (although on account of the continual wandering of empiricism into the field of science, we have, even in purely empirical physics, maxims which presuppose an idea of Nature as subject—as, for example, Nature chooses the shortest way; Nature is sparing in causes and lavish in effects); it is also cancelled by speculation, which looks only at *cause* in Nature.

3.

We can say of Nature as object that it is, not of Nature as subject; for this is being or productivity.

This absolute productivity must pass over into an empirical nature. In the idea of absolute productivity, is the thought of an ideal infinity. The ideal infinity must become an empirical one.

But empirical infinity is an infinite becoming. Every infinite series is but the exhibition of an intellectual or ideal infinity. The original infinite series (the ideal of all infinite series) is that wherein our intellectual infinity evolves itself, *viz.*, *Time*. The activity which sustains this series is the same as that which sustains our consciousness; consciousness, how-

ever, is *continuous*. Time, therefore, as the evolution of that activity, cannot be produced by composition. Now, as all other infinite series are only imitations of the originally infinite series, Time, no infinite series can be otherwise than continuous. In the original evolution the retarding agent (without which the evolution would take place with infinite rapidity) is nothing but *original reflection*; the necessity of reflection upon our acting in every organic phase (continued duality in identity) is the secret stroke of art whereby our being receives *permanence*.

Absolute continuity, therefore, exists only for the intuition, but not for the *reflection*. Intuition and reflection are opposed to each other. The infinite series is continuous for the productive *intuition*—interrupted and composite for the *reflection*. It is on this *contradiction* between intuition and reflection that those sophisms are based, in which the possibility of all motion is contested, and which are solved at every successive step by the productive activity. To the intuition, for example, the action of gravity takes place with perfect continuity; to the reflection, by fits and starts. Hence all the laws of mechanics, whereby that which is properly only the object of the productive intuition becomes an object of reflection, are really only laws for the reflection. Hence those fictitious notions of mechanics, the atoms of time in which gravitation acts, the law that the moment of solicitation is infinitely small, because otherwise an infinite rapidity would be produced in finite time, &c., &c. Hence, finally, the assertion that in mathematics no infinite series can really be represented as continuous, but only as advancing by fits and starts.

The whole of this inquiry into the opposition between reflection and the productivity of the intuition, serves only to enable us to deduce the general statement that in *all* productivity, and in productivity alone, there is absolute *continuity*—a statement of importance in the consideration of the whole of Nature; inasmuch, for example, as the law that in Nature there is no leap, that there is a continuity of forms in it, &c., is confined to the orig-

inal productivity of Nature, in which certainly there must be continuity, whereas from the stand-point of reflection all things must appear *disconnected* and *without* continuity—placed beside each other, as it were; we must therefore admit that both parties are right; those, namely, who assert continuity in Nature—for example, in organic Nature—no less than those who deny it, when we take into consideration the difference of their respective stand-points; and we thereby, at the same time, arrive at the distinction between dynamical and atomistic physics; for, as will soon become apparent, the two are distinguished only by the fact that the former occupies the stand-point of *intuition*, the latter that of *reflection*.

4.

These general principles being presupposed, we shall be able, with more certainty, to reach our aim, and make an exposition of the internal organism of our system.

(a) In the idea of becoming, we think the idea of gradualness. But an absolute productivity will exhibit itself empirically as a becoming with infinite rapidity, whereby there results nothing real for the intuition.

(Inasmuch as Nature must in reality be thought as engaged in infinite evolution, the permanence, the resting of the products of Nature—the organic ones, for instance—is not to be viewed as an absolute resting, but only as an evolution proceeding with infinitely small rapidity or with infinite tardiness. But hitherto evolution, with even finite rapidity, not to speak of infinitely small rapidity, has not been constructed.)

(b) That the evolution of Nature should take place with finite rapidity, and thus become an object of intuition, is not thinkable without an original limitation (a being limited) of the productivity.

(c) But if Nature be absolute productivity, then the ground of this limitation may lie *outside of it*. Nature is originally *only* productivity; there can, therefore, be nothing determined in this productivity

(all determination is negation) and so products can never be reached by it. If products are to be reached, the productivity must pass from being undetermined to being determined—that is, it must, as pure productivity, be cancelled. If now the ground of determination of productivity lay outside of Nature, Nature would not be originally absolutely productivity. Determination, that is, negation, must certainly come into Nature; but this negation, viewed from a higher stand-point, must again be positivity.

(d) But if the ground of this limitation lies *within Nature itself*, then Nature ceases to be *pure identity*. (Nature, in so far as it is only productivity, is pure identity, and there is in it absolutely nothing capable of being distinguished. In order that anything may be distinguished in it, its identity must be cancelled—Nature must not be identity, but duplicity.)

Nature must originally be an object to itself; this change of the pure subject into a self-object is unthinkable without an original sundering in Nature itself.

This duplicity cannot therefore be further deduced physically; for, as the condition of all Nature generally, it is the principle of all physical explanation, and all physical explanation can only have for its aim the reduction of all the antitheses which appear in Nature to that original antithesis in the heart of Nature, *which does not, however, itself appear*. Why is there no original phenomenon of Nature without this duplicity, if in Nature all things are not mutually subject and object to each other *ad infinitum*, and Nature even, in its origin, at once product and productive?

(e) If Nature is originally duplicity, there must be opposite tendencies even in the original productivity of Nature. (The positive tendency must be opposed by another, which is, as it were, anti-productive—retarding production; not as the contradictory, but as the negative—the really opposite of the former.) It is only then that, in spite of its being limited, there is no passivity in Nature, when even

that which limits it is again positive, and its original duality is a contest of really opposite tendencies.

(f') In order to arrive at a product, these opposite tendencies must concur. But as they are supposed equal, (for there is no ground for supposing them unequal,) wherever they meet they will annihilate each other; the product is therefore $= 0$, and once more no product is reached.

This inevitable, though hitherto not very closely remarked contradiction (namely, that a product can arise only through the concurrence of opposite tendencies, while at the same time these opposite tendencies mutually annihilate each other) is capable of being solved only in the following manner: There is absolutely no subsistence of a product thinkable, *without a continual process of being reproduced*. The product must be thought as *annihilated at every step*, and at *every step reproduced anew*. We do not really see the subsisting of a product, but only the continual process of being reproduced.

(It is of course very conceivable how the series $1-1+1-1\ldots\ldots$ on to infinity is thought as equal neither to 1 nor to 0. The reason however why this series is thought as $=\frac{1}{2}$ lies deeper. There is one absolute magnitude ($=1$), which, though continually annihilated in this series, continually recurs, and by this recurrence produces, not itself, but the mean between itself and nothing.—Nature, as object, is that which comes to pass in such an infinite series, and is $=$ a fraction of the original unit, to which the never cancelled duality supplies the numerator.)

(g) If the subsistence of the product is a continual process of being reproduced, then all *persistence* also is only in nature as *object*; in nature as *subject* there is only infinite *activity*.

The product is originally nothing but a mere point, a mere limit, and it is only from Nature's combatting against this point that it is, so to speak, raised to a full sphere—to a product. (Suppose, for illustration, a stream; it is *pure identity*; where it meets resistance, there is formed a whirlpool; this whirlpool is not anything

abiding, but something that every moment vanishes, and every moment springs up anew.—In Nature there is originally nothing distinguishable; all products are, so to speak, still in solution, and invisible in the universal productivity. It is only when retarding points are given, that they are thrown off and advance out of the universal identity.—At every such point the stream breaks (the productivity is annihilated), but at every step there comes a new wave which fills up the sphere).

The philosophy of nature has not to explain the productive (side) of nature; for if it does not posit this as in nature originally, it will never bring it into nature. It has to explain the permanent. But the fact that anything should become permanent in nature, can itself receive its explanation only from that contest of nature *against all permanence*. The products would appear as mere points, if nature did not give them extension and depth by its own pressure, and the products themselves would last only an instant, if nature did not at every instant crowd up against them.

(h) This seeming product, which is reproduced at every step, cannot be a really infinite product; for otherwise productivity would actually exhaust itself in it; in like manner it cannot be a finite product; for it is the force of the whole of nature that pours itself into it. It must therefore be at once infinite and finite; it must be only seemingly finite, but in infinite development.

The point at which this product originally comes in, is the universal point of retardation in nature, the point from which all evolution in nature begins. But in nature, as it is evolved, this point lies not here or there, but everywhere where there is a product.

This product is a finite one, but as the infinite productivity of nature concentrates itself in it, it must have a tendency to infinite development.—And thus gradually, and through all the foregoing intermediate links, we have arrived at the construction of that infinite becoming—the empirical exhibition of an ideal infinity.

We behold in what is called nature (i. e. in this assemblage of individual objects), not the primal product itself, but its evolution, (hence the point of retardation cannot remain *one*.)—By what means this evolution is again absolutely retarded, which must happen, if we are to arrive at a fixed product, has not yet been explained.

But through this product an original infinity evolves itself; this infinity can never decrease. The magnitude which evolves itself in an infinite series, is still infinite at every point of the line; and thus nature will be still infinite at every point of the evolution.

There is only one original point of retardation to productivity; but any number of points of retardation to evolution may be thought. Every such point is marked for us by a product; but at every point of the evolution nature is still infinite; therefore nature is still infinite in every product, and in every one lies the germ of a universe.*

(The question, by what means the infinite tendency is retarded in the product, is still unanswered. The original retardation in the productivity of nature, explains only why the evolution takes place with finite rapidity, but not why it takes place with infinitely small rapidity.)

(i) The product evolves itself *ad infinitum*. In this evolution, therefore, nothing can happen, which is not already a product (synthesis), and which might not divide up into new factors, each of these again having its factors.

Thus even by an analysis pursued *ad infinitum*, we could never arrive at anything in nature which should be absolutely simple.

(k) If however we suppose the evolution as completed, (although it *never* can be

* A traveller in Italy makes the remark that the whole history of the world may be demonstrated on the great obelisk at Rome; so, likewise, in every product of Nature. Every mineral body is a fragment of the annals of the earth. But what is the earth? Its history is interwoven with the history of the whole of Nature, and so passes from the fossil through the whole of inorganic and organic Nature, till it culminates in the history of the universe—one chain.—*Remark of the Original.*

completed,) still the evolution could not stop at anything which was a product, but only at the purely productive.

The question arises, whether a final, such that it is no longer a substrate, but the cause of all substrate, no longer a product, but absolutely productive—we will not say *occurs*, for that is unthinkable, but—can at least be proved in experience.

(l) Inasmuch as it bears the character of the unconditioned, it would have to exhibit itself as something, which, although itself not in space, is still the principle of all occupation of space.

What occupies space is not matter, for matter is the occupied space itself. That, therefore, which occupies space cannot be matter. Only that which is, is in space, not *being itself*.

It is self-evident that no positive external intuition is possible of that which is not in space. It would therefore have to be capable of being exhibited negatively. This happens in the following manner:

That which is in space, is, as such, mechanically and chemically destructible. That which is not destructible either mechanically or chemically must therefore lie outside of space. But it is only the final ground of all quality that has anything of this nature; for although one quality may be extinguished by another, this can nevertheless only happen in a third product, C, for the formation and maintenance of which A and B, (the opposite factors of C,) must continue to act.

But this indestructible (somewhat), which is thinkable only as pure intensity, is, as the cause of all substrate, at the same time the principle of divisibility *ad infinitum*. (A body, divided *ad infinitum* still occupies space in the same degree with its smallest part.)

That, therefore, which is purely productive without being a product, is but the final ground of quality. But every quality is a determinate one, whereas productivity is originally indeterminate. In the qualities, therefore, productivity appears as already retarded, and as it appears most original in them generally, it appears in them most originally retarded.

This is the point at which our mode of conception diverges from those of the currently so-called dynamical physics.

Our assertion, briefly stated, is this:— If the infinite evolution of nature were completed (which is impossible) it would separate up into original and simple actions, or, if we may so express ourselves, into simple productivities. Our assertion therefore is not: There are in nature such simple actions; but only, they are the ideal grounds of the explanation of quality. These *entelechies* cannot actually be shown, they do not *exist*; we have not therefore to explain here anything more than is asserted, namely, that such original productivities must be *thought* as the grounds of the explanation of all quality. This proof is as follows:

The affirmation that nothing which is in space, that is, that nothing at all is mechanically simple, requires no demonstration. That, therefore, which is in reality simple, cannot be thought as in space, but must be thought as outside of space. But outside of space only pure intensity is thought. This idea of pure intensity is expressed by the idea of action. It is not the product of this action that is simple, but the action itself abstracted from the product, and it must be simple in order that the product may be divisible *ad infinitum*. For although the parts are near vanishing, the intensity must still remain. And this pure intensity is what, even in infinite divisibility, sustains the substrate.

If, therefore, the assertion that affirms something simple as the basis of the explanation of quality is atomistic, then our philosophy is atomistic. But, inasmuch as it places the simple in something that is only productive without being a product, it is *dynamical atomistics*.

This much is clear, that if we admit an absolute division of nature into its factors, the last (thing) that remains over, must be something, which absolutely defies all division, that is, the simple. But the simple can be thought only as dynamical, and as such it is not in space at all (it designates only what is thought as altogether outside of space-occupation); there is therefore no intuition of it possible, ex-

cept through its product. In like manner there is no measure for it given but its product. For to pure thought it is the mere *origin* of the product (as the point is only the origin of the line), in one word pure *entelechy*. But that which is known, not in itself, but only in its product, is known altogether empirically. If, therefore, every original quality, as quality (not as substrate, in which quality merely inheres), must be thought as pure intensity, pure action, then qualities generally are only the absolutely empirical in our knowledge of nature, of which no construction is possible, and in respect to which there remains nothing of the philosophy of nature, save the proof that they are the absolute limit of its construction.

The question in reference to the ground of quality posits the evolution of nature as completed, that is, it posits something merely thought, and therefore can be answered only by an ideal ground of explanation. This question adopts the stand-point of reflection (on the product), whereas genuine dynamics always remain on the stand-point of intuition.

(It must here, however, be at once remarked that if the ground of the explanation of quality is conceived as an ideal one, the question only regards the explanations of quality, in so far as it is thought as absolute. There is no question, for instance, of quality, in so far as it shows itself in the dynamical process. For quality, so far as it is relative, there is certainly a [not merely ideal, but actually real] ground of explanation and determination; quality in that case is determined by its opposite, with which it is placed in conflict, and this antithesis is itself again determined by a higher antithesis, and so on back into infinity; so that, if this universal organization could dissolve itself, all matter likewise would sink back into dynamical inactivity, that is, into absolute defect of quality. (Quality is a higher power of matter, to which the latter elevates itself by reciprocity.) It is demonstrated in the sequel that the dynamical process is a limited one for each individual sphere; because it is only thereby that definite points of relation for the determ-

ination of quality arise. This limitation of the dynamical process, that is, the proper determination of quality, takes place by means of no force other than that by which the evolution is universally and absolutely limited, and this negative element is the only one in things that is indivisible, and mastered by nothing.—The absolute relativity of all quality may be shown from the electric relation of bodies, inasmuch as the same body that is positive with one is negative with another, and conversely. But we might now henceforth abide by the statement (which is also laid down in the Outlines): *All quality is electricity*, and conversely, *the electricity of a body is also its quality*, (for all difference of quality is equal to difference of electricity, and all [chemical] quality is reducible to electricity).—Everything that is sensible for us (sensible in the narrower acceptation of the term, as colors, taste, &c.), is doubtless sensible to us only through electricity, and the only immediately sensible (element) would then be electricity,* a conclusion to which the universal duality of every sense leads us independently, inasmuch as in Nature there is properly only one duality. In galvanism, sensibility, as a reagent, reduces all quality of bodies, for which it is a reagent to an original difference. All bodies which, in a chain, at all affect the sense of taste or that of sight, be their differences ever so great, are either alkaline or acid, excite a negative or positive shock, and here they always appear as active in a higher than the merely chemical power.

Quality considered as absolute is inconstructible, because quality generally is not anything absolute, and there is no other quality at all, save that which bodies show mutually in relation to each other, and all quantity is something in virtue of which the body is, so to speak, raised above itself.

All hitherto attempted construction of

quality reduces itself to the two attempts; to express qualities by figures, and so, for each original quality, to assume a particular figure in Nature; or else, to express quality by analytical formulæ (in which the forces of attraction and repulsion supply the negative and positive magnitudes.) To convince oneself of the futility of this attempt, the shortest method is to appeal to the emptiness of the explanations to which it gives rise. Hence we limit ourselves here to the single remark, that through the construction of all matter out of the two fundamental forces, different degrees of density may indeed be constructed, but certainly never different qualities as qualities; for although all dynamical (qualitative) changes appear, in their lowest stage, as changes of the fundamental forces, yet we see at that stage only the product of the process—not the process itself—and those changes are *what require explanation*, and the ground of explanation must therefore certainly be sought in something higher.

The only possible ground of explanation for quality is an ideal one; because this ground itself presupposes something purely ideal. If any one inquire into the final ground of quality, he transports himself back to the starting point of Nature. But where is this starting point? and does not all quality consist in this, that matter is prevented by the general concatenation from reverting into its originality?

From the point at which reflection and intuition separate, a separation, be it remarked, which is possible only on the hypothesis of the evolutions being complete, physics divide into the two opposite directions, into which the two systems, the atomistic and the dynamical, have been divided.

The *dynamical system* denies the absolute evolution of Nature, and passes from Nature as synthesis (i. e. Nature as subject) to Nature as evolution (i. e. Nature as object); the atomistic system passes from the evolution, as the original, to Nature as synthesis; the former passes from the stand-point of intuition to that of reflection; the latter from the stand-point of reflection to that of intuition.

* Volta already asks, with reference to the affection of the senses by galvanism—"Might not the electric fluid be the immediate cause of all flavors? Might it not be the cause of sensation in all the other senses?"—*Remark of the Original.*

Both directions are equally possible. If the analysis only is right, then the synthesis must be capable of being found again through analysis, just as the analysis in its turn can be found through the synthesis. But whether the analysis is correct can be tested only by the fact that we can pass from it again to the synthesis. The synthesis therefore is, and continues, the absolutely presupposed.

The problems of the one system turn exactly round into those of the other; that which, in atomical physics, is the cause of the *composition* of Nature is, in dynamical physics, *that which checks evolution*. The former explains the composition of Nature by the force of cohesion, whereby, however, no continuity is ever introduced into it; the latter, on the contrary, explains cohesion by the continuity of evolution. (All cohesion is originally only in the productivity.)

Both systems set out from something purely ideal. Absolute synthesis is as much purely *ideal* as absolute analysis. The Real occurs only in Nature as *product*; but Nature is not product, either when thought as absolute involution or as absolute evolution; product is what is contained between the two extremes.

The first problem for both systems is to construct the product—i. e. that wherein those opposites become real. Both reckon with purely *ideal* magnitudes so long as the product is not constructed: it is only in the *directions* in which they accomplish this that they are opposed. Both systems, as far as they have to deal with merely ideal factors, have the same value, and the one forms the test of the other.—That which is concealed in the depths of productive Nature must be reflected as product in Nature as Nature, and thus the atomistic system must be the continual reflex of the dynamical. In the Outlines, of the two directions, that of atomistic physics has been chosen intentionally. It will contribute not a little to the understanding of our science, if we here demonstrate in the *productivity* what was there shown in the *product*.

(m) *In the pure productivity of Nature there is absolutely nothing distinguishable*

except duality; it is only productivity dualized in itself that gives the product.

Inasmuch as the absolute productivity arrives only at producing *per se*, not at the producing of a determinate [somewhat], the tendency of Nature, in virtue of which product is arrived at, must be the *negative* of productivity.

In Nature, in so far as it is real, there can no more be productivity without a product, than a product without productivity. Nature can only approximate to the two extremes, and it must be demonstrated that it approximates to both.

(a) *Pure productivity passes originally into formlessness.*

Wherever Nature loses itself in formlessness, productivity exhausts itself in it. (This is what we express when we talk of a becoming latent.)—Conversely, wherever the form predominates—i. e. wherever the productivity is *limited*—the productivity manifests itself; it appears, not as a (representable) product, but as productivity, although passing over into one product, as in the phenomena of heat. (The idea of imponderables is only a symbolic one.)

(b) *If productivity passes into formlessness, then, objectively considered, it is the absolutely formless.*

(The boldness of the atomical system has been very imperfectly comprehended. The idea which prevails in it, of an absolutely formless [somewhat] everywhere incapable of manifestation as determinate matter, is nothing other than the symbol of nature approximating to productivity.—The nearer to productivity the nearer to formlessness.

(γ) *Productivity appears as productivity only when limits are set to it.*

That which is everywhere and in everything, is, for that very reason, nowhere.—Productivity is fixed only by limitation.—*Electricity exists* only at that point at which limits are given, and it is only a poverty of conception that would look for anything else in its phenomena beyond the phenomena of (limited) productivity.—The condition of *light* is an antithesis in the electric and galvanic, as well as in the chemical, process, and even light which comes to us without our coöpera-

tion (the phenomenon of productivity exerted all round by the sun) presupposes that antithesis.*

(d) *It is only limited productivity that gives the start to product.* (The explanation of product must begin at the origination of the fixed point at which the start is made.) *The condition of all formation is duality.* (This is the more profound signification that lies in Kant's construction of matter from opposite forces.)

Electrical phenomena are the general scheme for the construction of matter universally.

(e) *In Nature, neither pure productivity nor pure product can ever be arrived at.*

The former is the negation of all product, the latter the negation of all productivity.

(Approximation to the former is the absolutely decomposable, to the latter the absolutely indecomposable, of the atomistics. The former cannot be thought without, at the same time, being the absolutely incompossible, the latter without, at the same time, being the absolutely composable.)

Nature will therefore originally be the middle [somewhat] arising out of the two, and thus we arrive at the idea of a productivity engaged in a transition into product, or of a product that is productive *ad infinitum*. We hold to the latter definition.

The idea of the product (the fixed) and that of the productive (the free) are mutually opposed.

Seeing that what we have postulated is already product, it can, if it is productive at all, be productive only in a *determinate way*. But determined productivity is (native) *formation*. That third [somewhat] must therefore be *in the state of formation*.

* According to the foregoing experiments, it is at least not impossible to regard the phenomena of light and those of electricity as one, since in the prismatic spectrum the colors may at least be considered as opposites, and the white light, which regularly falls in the middle, be regarded as the indifference-point; and for reasons of analogy one is tempted to consider this construction of the phenomena of light as the real one.—*Remark of the Original.*

But the product is supposed to be productive *ad infinitum* (that transition is never absolutely to take place); it will therefore at every stage be productive in a determinate way; the productivity will remain, but not the product.

(The question might arise how a transition from form to form is possible at all here, when *no form* is fixed. Still, that *momentary* forms should be reached, has already been rendered possible by the fact that the evolution cannot take place with infinite rapidity, in which case, therefore, for every step at least, the form is certainly a determinate one.)

The product will appear as in *infinite metamorphosis*.

(From the stand-point of reflection, as continually on the leap from fluid to solid, without ever reaching, however, the required form.—Organizations that do not live in the grosser element, at least live on the deep ground of the aërial sea—many pass over, by metamorphoses, from one element into another; and what does the animal, whose vital functions almost all consist in contractions, appear to be, other than such a leap?)

The metamorphosis will not possibly take place *without rule*. For it must remain within the original antithesis, and is thereby confined within limits.†

(This accordance with rule will express itself solely by an internal relationship of forms—a relationship which again is not thinkable without an archetype which lies at the basis of all, and which, with however manifold divergences, they nevertheless all express.

But even with such a product, we have not that which we were in quest of—a product which, while productive *ad infinitum*, remains *the same*. That this product should remain the same seems unthinkable, because it is not thinkable without an absolute checking or suppression of the productivity.—The product would have to be checked, as the productivity was checked, for it is still productive—checked

† Hence wherever the antithesis is cancelled or deranged, the metamorphosis becomes irregular. For what is disease even but metamorphosis?—*Remark of the Original.*

by dualization and limitation resulting therefrom. But it must at the same time be explained how the productive product can be checked at each individual stage of its formation, without its ceasing to be productive, or how, *by dualization itself, the permanence of the productivity is secured.*

In this way we have brought the reader as far as the problem of the fourth section of the Outlines, and we leave him to find in it for himself the solution along with the corollaries which it brings up.— Meanwhile, we shall endeavor to indicate how the deduced product would necessarily appear from the stand-point of *reflection.*

The product is the synthesis wherein the opposite extremes meet, which on the one side are designated by the absolutely decomposable—on the other as indecomposable.—How continuity comes into the absolute discontinuity with which he sets out, the atomic philosopher endeavors to explain by means of cohesive, plastic power, &c., &c. In vain, for continuity is only *productivity* itself.

The manifoldness of the forms which such product assumes in its metamorphosis was explained by the difference in the stages of development, so that, parallel with every step of development, goes a particular form. The atomic philosopher posits in nature certain fundamental forms, and as in it everything strives after form, and every thing which does form itself has also its *particular form*, so the fundamental forms must be conceded, but certainly only as indicated in nature, not as actually existent.

From the standpoint of reflection, the becoming of this product must appear as a continual striving of the original actions toward the production of a determinate form, and a continual recancelling of those forms.

Thus, the product would not be product of a simple tendency; it would be only the visible expression of an internal proportion, of an internal equipoise of the original actions, which neither reduce themselves mutually to absolute formlessness, nor yet, by reason of the universal

conflict, allow the production of a determinate and fixed form.

Hitherto (so long as we have had to deal merely with ideal factors), there have been opposite directions of investigation possible; from this point, inasmuch as we have to pursue a real product in its developments, there is only one direction.

(n) By the unavoidable separation of productivity into opposite directions at every single step of development the product itself is separated into *individual products*, by which, however, for that very reason, only different stages of development are marked.

That this is so may be shown either in the products themselves, as is done when we compare them with each other with regard to their form, and search out a continuity of formation—an idea which, from the fact that continuity is never in the products (for the reflection), but always only in the *productivity*, can never be perfectly realized.

In order to find continuity in productivity, the successive steps of the *transition of productivity into product* must be more clearly exhibited than they have hitherto been. From the fact that the productivity gets *limited*, (*v. supra*), we have in the first instance only the start for a product, only the fixed point for the productivity generally. It must be shown how the productivity gradually materializes itself, and changes itself into products ever more and more fixed, so as to produce a *dynamical scale in nature*, and this is the real subject of the fundamental problem of the whole system.

In advance, the following may serve to throw light on the subject. In the first place, a dualization of the productivity is demanded; the cause through which this dualization is effected remains in the first instance altogether outside of the investigation. By dualization a change of contraction and expansion is perhaps conditioned. This change is not something in matter, but is *matter itself*, and the first stage of productivity passing over into product. *Product* cannot be reached except through a stoppage of this change, that is, through a third [somewhat] which

fixes that change itself, and thus matter in its lowest stage—in the *first power*—would be an object of intuition; that change would be seen in rest, or in equipoise, just as, conversely again, by the suppression of the third [somewhat] matter might be raised to a higher power. Now it might be possible that those products just deduced stood upon *quite different degrees* of materiality, or of *that transition*, or that those different degrees were more or less *distinguishable* in the one than in the other; that is, a dynamical scale of those products would thereby have to be demonstrated.

(o) In the *solution* of the problem itself, we shall continue, in the first instance, in the direction hitherto taken, without knowing where it may lead us.

There are individual products brought into nature; but in these products productivity, as productivity, is held to be still always distinguishable. Productivity has not yet absolutely passed over into product. The subsistence of the product is supposed to be a continual self-reproduction.

The problem arises: By what is this absolute transition—exhaustion of the productivity in the product—prevented? or by what does its subsistence become a continual self-reproduction?

It is absolutely unthinkable how the activity that everywhere tends towards a product is prevented from going over into it *entirely*, unless that transition is prevented by *external influences*, and the product, if it is to subsist, is compelled at every step to reproduce itself *anew*.

Up to this point, however, no trace has been discovered of a cause opposed to the product (to organic nature). Such a cause can, therefore, at present, only be postulated. (We thought we saw the whole of nature exhaust itself in that product, and it is only here that we remark, that in order to comprehend such product, *something else* must be presupposed, and a new antithesis must come into nature.)

Nature has hitherto been for us absolute *identity* in duality; here we come upon an antithesis that must again take place *within* the other. This antithesis must be

capable of being shown in the deduced product itself, if it is capable of being deduced at all.)

The deduced product is an activity *directed towards*; this cannot be distinguished as such without an activity *directed inwards from without*, (i. e. directed upon itself,) and this activity, on the other hand, cannot be thought, unless it is *pressed back* (reflected) from without.

In the opposite directions, which arise through this antithesis lies the principle for the construction of all the phenomena of life—on the suppression of those opposite directions, life remains over, either as *absolute activity* or *absolute receptivity*, since it is possible only as the perfect *inter-determination* of receptivity and activity.

We therefore refer the reader to the Outlines themselves, and merely call his attention to the higher stage of construction which we have here reached.

We have above (g) explained the origin of a *product generally* by a struggle of nature against the original point of check, whereby this point is raised to a full sphere, and thus receives permanence. Here, since we are deducing a struggle of *external nature*, not against a mere point, but against a *product*, the first construction rises for us to a *second power*, as it were,—we have a double product, (and thus it might well be shown in the sequel that organic nature generally is only the higher power of the inorganic, and that it rises above the latter for the very reason that in it even that which was already product again becomes product.)

Since the product, which we have deduced as the most primary, drives us to a side of nature that is opposed to it, it is clear that our construction of the origin of a product generally is *incomplete*, and that we have not yet, by a long way, satisfied our problem; (the problem of all science is to construct the origin of a fixed product.)

A productive product, as such, can subsist only under the influence of external forces, because it is only thereby that productivity is interrupted—prevented from being extinguished in the product. For these external forces there must now again

be a particular sphere; those forces must lie in a world which is *not productive*. But that world, for this very reason, would be a world fixed and undetermined in every respect. The problem—how a product in nature is arrived at—has therefore received a one-sided solution by all that has preceded. “The product is checked by dualization of the productivity at every single step of development.” But this is true only for the *productive* product, whereas we are here treating of a *non-productive* product.

The contradiction which meets us here can be solved only by the finding of a *general* expression for the construction of a *product generally*, (regardless of whether it is productive or has ceased to be so).

Since the existence of a world, that is *not productive* (inorganic) is in the first instance merely postulated, in order to explain the productive one, so its conditions can be laid down only hypothetically, and as we do not in the first instance know it at all except from its opposition to the productive, those conditions likewise must be deduced only from this opposition. From this it is of course clear, —what is also referred to in the Outlines—that this second section, as well as the first, contains throughout merely hypothetical truth, since neither organic nor inorganic nature is explained without our having reduced the construction of the two to a common expression, which, however, is possible only through the synthetic part.—This must lead to the highest and most general principles for the construction of a *nature generally*; hence we must refer the reader who is concerned about a knowledge of our system altogether to that part. The hypothetical deduction of an inorganic world and its conditions we may pass over here all the more readily, that they are sufficiently detailed in the Outlines, and hasten to the most general and the highest problem of our science.

The most general problem of speculative physics may now be expressed thus: *To reduce the construction of organic and inorganic products to a common expression.*

We can state only the main principles of such a solution, and of these, for the most part, only such as have not been completely deduced in the Outlines themselves—(3d principal section.)

A.

Here at the very beginning we lay down the principle that *as the organic product is the product in the second power, the ORGANIC construction of the product must be, at least, the sensuous image of the ORIGINAL construction of all product.*

(a) In order that the productivity may be at all fixed at a point, *limits must be given*. Since *limits* are the condition of the first phenomenon, the cause whereby limits are produced *cannot be a phenomenon*, it goes back into the interior of nature, or of each respective product.

In organic nature, this limitation of productivity is shown by what we call sensibility, which must be thought as the first condition of the construction of the organic product.

(b) The immediate effect of confined productivity is a *change of contraction and expansion* in the matter already given, and as we now know, constructed, as it were, for the second time.

(c) Where this change stops, productivity passes over into product, and where it is again restored, product passes over into productivity. For since the product must remain productive *ad infinitum*, *those three stages of productivity must be capable of being DISTINGUISHED* in the product; the absolute transition of the latter into product is the cancelling of product itself.

(d) As these three stages are distinguishable in the *individual*, so they must be distinguishable in *organic nature throughout*, and the scale of organizations is nothing more than a scale of *productivity itself*. (Productivity exhausts itself to degree *c* in the product *A*, and can begin with the product *B* only at the point where it left off with *A*, that is, with degree *d*, and so on downwards to the *vanishing* of all productivity. If we knew the absolute *degree* of productivity of the *earth* for example—a degree which is determined by the earth's

relation to the sun—the limit of organization upon it might be thereby more accurately determined than by incomplete experience—which must be incomplete for this reason, if for no other, that the catastrophes of nature have, beyond doubt, swallowed the last links of the chain. A true system of Natural History, which has for its object not the *products* [of nature] but *nature itself*, follows up the one productivity that battles, so to speak, against freedom, through all its windings and turnings, to the point at which it is at last compelled to perish in the product.)

It is upon this dynamical scale, in the individual, as well as in the whole of organic nature, that the construction of all organic phenomena rests.

B.*

These principles, stated universally, lead to the following fundamental principles of a universal theory of nature.

(a) Productivity must be *primarily* limited. Since *outside* of limited productivity there is [only] *pure identity* the limitation cannot be established by a difference already existing, and therefore must be so by an *opposition* arising in *productivity itself*—an opposition to which we here revert as a first postulate.†

(b) This difference thought *purely* is the first condition of all [natural] activity, the productivity is attracted and repelled‡ between opposites (the primary limits); in this change of expansion and contraction there arises necessarily a common element, but one which exists only in *change*. If

* From this point onwards, there are, as in the Outlines, additions in notes (similar to the few that have already been admitted into the text in brackets []). They are excerpted from a MS. copy of the author's.

† The first postulate of natural science is an antithesis in the pure identity of Nature. This antithesis must be thought quite purely, and not with any other substrate besides that of activity; for it is the condition of all substrate. The person who cannot think activity or opposition without a substrate, cannot philosophize at all. For all philosophizing goes only to the deduction of a substrate.

‡ The phenomena of electricity show the scheme of nature oscillating between productivity and product. This condition of oscillation or change, attractive and repulsive force, is the real condition of formation.

it is to exist *outside* of change, then the *change itself* must become fixed. The *active* in change is the productivity sundered within itself.

(c) It is asked:

(a) By what means such change can be fixed at all; it cannot be fixed by anything that is contained as a link in change itself, and must therefore be fixed by a *tertium quid*.

(β) But this *tertium quid* must be able to *invade* that original antithesis; but *outside* of that antithesis nothing is*; it (that *tertium quid*) must therefore be primarily contained in it, as something which is mediated by the antithesis, and by which in turn the antithesis is mediated; for otherwise there is no ground why it should be primarily contained in that antithesis.

The antithesis is dissolution of identity. But nature is *primarily* identity. In that antithesis, therefore, there must again be a struggle after identity. This struggle is immediately conditioned *through* the antithesis; for if there was no antithesis, there would be identity, absolute rest, and therefore no *struggle* toward identity. If, on the other hand, there were not identity in the antithesis, the antithesis itself could not endure.

Identity produced out of difference is indifference; that *tertium quid* is therefore a *struggle towards indifference*—a struggle which is conditioned, by the difference itself, and by which it, on the other hand, is conditioned.—(The difference must not be looked upon as a difference at all, and is nothing for the intuition, except through a third, which sustains it—to which change itself adheres.)

This *tertium quid*, therefore, is all that is substrate in that primal change. But substrate posits change as much as change posits substrate; and there is here no first and no second; but difference and struggle towards indifference, are, as far time is concerned, one and contemporary.

Axiom. No identity in Nature is absolute, but all is only indifference.

Since that *tertium quid* itself *presupposes* the primary antithesis, the antithesis

* For it is the only thing that is given us to derive all other things from.

itself cannot be *absolutely* removed by it; *the condition of the continuance of that tertium quid* [of that third activity, or of Nature] *is the perpetual continuance of the antithesis*, just as, conversely, *the continuance of the antithesis is conditioned by the continuance of the tertium quid*.

But how, then, shall the antithesis be thought as continuing?

We have one primary antithesis, between the limits of which all Nature must lie; if we assume that the factors of this antithesis can really pass over into each other, or go together absolutely in some *tertium quid* (some individual product), then the antithesis is removed, and along with it the *struggle*, and so all the activity of nature. But that the antithesis should endure, is thinkable only by its being *infinite*—by the extreme limits being held asunder in *infinitum*—so that always only the mediating links of the synthesis, never the last and absolute synthesis itself, can be produced, in which case it is only *relative points of indifference* that are always attained, never absolute ones, and every successively originated difference leaves behind a new and still unremoved antithesis, and this again goes over into indifference, which, in its turn, *partially* removes the primary antithesis. Through the original antithesis and the struggle towards indifference, there arises a product, but the product partially does away with the antithesis; through the doing away of that part—that is, through the origination of the product itself—there arises a new antithesis, different from the one that has been done away with, and through it, a product different from the first; but even this leaves the absolute antithesis unremoved, duality therefore, and through it a product, will arise anew, and so on to infinity.

Let us say, for example, that by the product *A*, the antitheses *c* and *d* are united, the antitheses *b* and *e* still lie outside of that union. This latter is done away with in *B*, but this product also leaves the antithesis *a* and *f* unremoved; if we say that *a* and *f* mark the extreme limits, then the union of these will be that product which can never be arrived at.

Between the extremes *a* and *f*, lie the antitheses *c* and *d*, *b* and *e*; but the series of these intermediate antitheses is infinite; all these intermediate antitheses are included in the one absolute antithesis.—In the product *A*, of *a* only *c*, and of *f* only *d* is removed; let what remains of *a* be called *b*, and of *f*, *e*; these will indeed, by virtue of the absolute struggle towards indifference, become again united, but they leave a new antithesis uncancelled, and so there remains between *a* and *f* an infinite series of intermediate antitheses, and the product in which those absolutely cancel themselves never is, but only *becomes*.

This infinitely progressive formation must be thus represented. The original antithesis would necessarily be cancelled in the primal product *A*. The product would necessarily fall at the indifference-point of *a* and *f*, but inasmuch as the antithesis is an absolute one, which can be cancelled only in an infinitely continued, never actual, synthesis, *A* must be thought as the centre of an infinite periphery, (whose diameter is the infinite line *a f*.) Since in the product of *a* and *f*, only *c* and *d* are united, there arises in it the new division *b* and *e*, the product will therefore divide up into opposite directions; at the point where the struggle towards indifference attains the preponderance, *b* and *e* will combine and form a new product different from the first—but between *a* and *f*, there still lie an infinite number of antitheses; the indifference-point *B* is therefore the centre of a periphery which is comprehended in the first, but is itself again infinite, and so on.

The antithesis of *b* and *e* in *B* is *maintained* through *A*, because it (*A*) leaves the antithesis *un-united*; in like manner the antithesis in *C* is *maintained* through *B*, because *B*, in its turn, cancels only a part of *a* and *f*. But the antithesis in *C* is maintained through *B*, only in so far as *A* maintains the antithesis in *B*.* What

* The whole of the uncancelled antithesis of *A* is carried over to *B*. But again, it cannot entirely cancel itself in *B*, and is therefore carried over to *C*. The antithesis in *C* is therefore maintained by *B*, but only in so far as *A* maintains the antithesis which is the condition of *B*.

therefore in *C* and *B* results from this antithesis—[suppose, for example, the result of it were universal gravitation]—is occasioned by the common influence of *A*, so that *B* and *C*, and the infinite number of other products that come, as intermediate links between *a* and *f*, are, in relation to *A*, only one product.—The difference, which remains over in *A* after the union of *c* and *d*, is only one, into which then *B*, *C*, &c., again divide.

But the continuance of the antithesis is, in the case of every product, the condition of the struggle towards indifference, and thus a struggle towards indifference is maintained through *A* in *B*, and through *B* in *C*.—But the antithesis which *A* leaves uncancelled, is only one, and therefore also this tendency in *B*, in *C*, and so on to infinity, is only conditioned and maintained through *A*.

The organization thus determined is no other than the organization of the Universe in the system of gravitation.—*Gravity is simple*, but its condition is duplicity.—Indifference arises only out of difference.—The cancelled duality is matter, inasmuch as it is only mass.

The absolute indifference-point exists nowhere, but is, as it were, divided among several single points.—The Universe which forms itself from the centre towards the periphery, seeks the point at which even the extreme antitheses of nature cancel themselves; the impossibility of this cancelling guarantees the infinity of the Universe.

From every product *A*, the uncancelled antithesis is carried over to a new one, *B*, the former thereby becoming the cause of duality and gravitation for *B*.—(This carrying over is what is called action by distribution, the theory of which receives light only at this point.*)—Thus, for example, the sun, being only relative indifference, maintains, as far as its sphere of action reaches, the antithesis, which is the condition of weight upon the subordinate world-bodies.†

* That is, distribution exists only, when the antithesis in a product is not absolutely but only relatively cancelled.

† The struggle towards indifference attains the preponderance over the antithesis, at a greater or less distance from the body which

The indifference is cancelled at every step, and at every step it is restored. Hence, weight acts upon a body at rest as well as upon one in motion.—The universal restoration of duality, and its recancelling at every step, can [that is] appear only as a *nisus* against a third (somewhat). This third (somewhat) is therefore the pure zero—abstracted from tendency it is nothing [= 0], therefore purely ideal, (marking only direction)—a point.‡ Gravity [the centre of gravity] is in the case of every total product only one [for the antithesis is one], and so also the relative indifference-point is only one. The indifference-point of the individual body marks only the line of direction of its tendency towards the universal indifference-point; hence this point may be regarded as the only one at which gravity acts; just as that, whereby bodies alone attain consistence for us, is simply this tendency outwards.§

Vertical falling towards this point is not a simple, but a compound motion, and it is a subject for wonder that this has not been perceived before.||

Gravity is not proportional to mass (for exercises the distribution, (as, for example, at a certain distance, the action by distribution, which an electric or magnetic body exercises upon another body, appears as cancelled.) The difference in this distance is the ground of the difference of world-bodies in one and the same system, inasmuch, namely, as one part of the matter is subjected to indifference more than the rest. Since, therefore, the condition of all product is difference, difference must again arise at every step as the source of all existence, but must also be thought as again cancelled. By this continual reproduction and resuscitation creation takes place anew at every step.

† It is precisely zero to which Nature continually strives to revert, and to which it would revert, if the antithesis were ever cancelled. Let us suppose the original condition of Nature=0 (want of reality). Now zero can certainly be thought as dividing itself into 1—1 (for this = 0); but if we posit that this division as not infinite (as it is in the infinite series 1—1+1—1……), then Nature will as it were oscillate continually between zero and unity—and this is precisely its condition.

§ Baader on the Pythagorean Square. 1798. (Remark of the original.)

|| Except by the thoughtful author of a review of my work on the world-soul, in the Würzburg *Gelehrte Anzeiger*, the only review of that work that has hitherto come under my notice. (Remark of the original.)

what is this mass but an abstraction of the specific gravity which you have hypostatized?); but, conversely, the mass of a body is only the expression of the momentum, with which the antithesis in it cancels itself.

(d) By the foregoing, the construction of matter in general is completed, but not the construction of specific difference in matter.

That which all the matter of *B*, *C*, &c., in relation to *A* has *common* under it, is the difference which is not cancelled by *A*, and which again cancels itself *in part* in *B* and *C*—hence, therefore, the gravity mediated by that difference.

What *distinguishes B and C from A* therefore, is the difference which is not cancelled by *A*, and which becomes the condition of gravity in the case of *B* and *C*.—Similarly, what distinguishes *C* from *B* (if *C* is a product subordinate to *B*), is the difference which is not cancelled by *B*, and which is again carried over to *C*. Gravity, therefore, is not the same thing for the higher and for the subaltern world-bodies, and there is as much variety in the central forces as in the conditions of attraction.

The means whereby, in the products *A*, *B*, *C*, which, in so far as they are opposed to *each other*, represent products absolutely *homogeneous* [because the antithesis is the same for the *whole product*.] another difference of individual products is possible, is the possibility of a difference of relation between the factors in the cancelling, so that, for example, in *X*, the positive factor, and in *Y*, the negative factor, has the preponderance, (thus rendering the one body positively, and the other negatively, electric).—All difference is difference of electricity.*

(e) That the identity of matter is not *absolute* identity, but only *indifference*, can be proved from the possibility of again cancelling the identity, and from the accompanying phenomena.† We may be al-

* It is here taken for granted that what we call the quality of bodies, and what we are wont to regard as something homogeneous, and the ground of all homogeneity is really only an expression for a cancelled difference.

† In the M.S. copy the last part of this sentence reads as follows: The construction of

lowed, for brevity's sake, to include this recancelling, and its resultant phenomena under the expression *dynamical process*, without, of course, affirming decisively whether anything of the sort is everywhere actual.

Now there will be exactly as many stages in the dynamical process as there are stages of transition from difference to indifference.

(a) The first stage will be marked by objects *in which the reproduction and recancelling of the antithesis at every step is still itself an object of perception.*

The whole product is reproduced anew at every step,‡ that is, the antithesis which cancels itself in it, springs up afresh every moment; but this reproduction of difference loses itself immediately in *universal gravity*;§ this reproduction, therefore, can be perceived only in *individual* objects, which seem to gravitate *towards each other*; since, if to the one factor of an antithesis is offered its opposite (in another) *both factors become heavy with reference to each other*, in which case, therefore, the general gravity is not cancelled, but a special one occurs *within* the general.—An instance of such a mutual relation between two products, is that of the earth and the magnetic needle, in which is distinguished the continual recancelling of indifference in gravitation towards the poles||—the continual sinking back into identity** in gravitation towards the universal indifference-point. Here, therefore, it is not the *object*, but the *being-reproduced of the object* that becomes object.††

quality ought necessarily to be capable of experimental proof, by the recancelling the identity, and of the phenomena which accompany it.—

† Every body must be thought as reproduced at every step—and therefore also every total product.

§ The *universal*, however, is never perceived, for the simple reason that it is universal.

|| Whereby what was said above is confirmed,—that falling toward the centre is a compound motion.

** The reciprocal cancelling of opposite motions.

†† Or the object is seen in the first stage of becoming, or of transition 'from difference to indifference. The phenomena of magnetism even serve, so to speak, as an impulse, to transport us to the standpoint beyond the product, which is necessary in order to the construction of the product.

(β) At the first stage, in the identity of the product, its duplicity again appears; in the second, the antithesis will divide up and distribute itself among different objects (*A* and *B*). From the fact that the one factor of the antithesis attained a *relative* preponderance in *A*, the other in *B*, there will arise, according to the same law as in *a*, a *gravitation* of the factors toward each other, and so a new difference, which, when the relative equiponderance is restored in each, results in *repulsion**—(change of attraction and repulsion, *second stage* in which matter is seen)—*electricity*.

(γ) At the second stage the one factor of the product had only a *relative* preponderance;† at the *third* it will attain an *absolute* one—by the two bodies *A* and *B*, the original antithesis is again completely represented—matter will revert to the *first stage* of becoming.

At the *first stage* there is still *PURE difference*, without substrate [for it was only out of it that a substrate arose]; at the *second stage* it is the *simple* factors of two *products* that are opposed to each other; at the *third* it is the *PRODUCTS THEMSELVES* that are opposed; here is difference in the *third power*.

If two products are absolutely opposed to each other,‡ then in each of them singly indifference of gravity (by which alone each is) must be *cancelled*, and they must gravitate to *each other*.§ (In the *second stage* there was only a mutual gravitating

* There will result the opposite effect—a *negative attraction*, that is, repulsion. Repulsion and attraction stand to each other as positive and negative magnitudes. Repulsion is only *negative attraction*—attraction only *negative repulsion*; as soon, therefore, as the maximum of attraction is reached, it passes over into its opposite—into repulsion.

† If we designate the factors as + and — electricity, then, in the *second stage*, + electricity had a *relative preponderance* over — electricity.

‡ If no longer the individual factors of the two products, but the *whole products* themselves are absolutely opposed to each other.

§ For product is something wherein antithesis *cancel*s itself, but it *cancel*s itself only through indifference of gravity. When, therefore, two products are opposed to each other, the indifference in each *individually* must be absolutely *cancelled*, and the *whole products* must *gravitate* toward each other.

of the factors to each other—here there is a *gravitating* of the products.)||—This process, therefore, first assails the *indifferent (element) of the PRODUCT*—that is, the products themselves dissolve.

Where there is equal difference there is equal indifference; difference of *products*, therefore, can end only with *indifference of products*.—(All hitherto deduced indifference has been only indifference of substrateless, or at least simple factors.—Now we come to speak of an indifference of products.) This struggle will not cease till there exists a common product. The product, in forming itself, passes, from both sides, through all the intermediate links that lie between the two products [for example, through all the intermediate stages of specific gravity], till it finds the point at which it succumbs to indifference, and the product is fixed.

GENERAL REMARK.

By virtue of the first construction, the product is posited as identity; this identity, it is true, again resolves itself into an antithesis, which, however, is no longer an antithesis cleaving to *products*, but an antithesis in the *productivity* itself.—The product, therefore, as product, is identity.—But even in the sphere of products, there again arises a duplicity in the *second stage*, and it is only in the *third* that even the duplicity of the *products* again becomes *identity* of the *products*.**—There is therefore here also a *progress from thesis to antithesis, and thence to synthesis*.—The last synthesis of matter closes in the chemical process; if composition is to proceed yet further in it, then this circle must open again.

|| In the electric process, the *whole product* is not active, but only the one factor of the product, which has the *relative preponderance* over the other. In the chemical process in which the *whole product* is active, it follows that the indifference of the *whole product* must be *cancelled*.

** We have therefore the following scheme of the dynamical process:

First stage: Unity of the product—magnetism.

Second stage: Duplicity of the products—electricity.

Third stage: Unity of the products—chemical process.

We must leave it to our readers themselves to make out the conclusions to which the principles here stated lead, and the universal interdependence which is introduced by them into the phenomena of Nature.—Nevertheless, to give one instance: when in the chemical process the bond of gravity is loosed, the phenomenon of *light* which accompanies the chemical process in its greatest perfection (in the process of combustion), is a remarkable phenomenon, which, when followed out further, confirms what is stated in the Outlines, page 146:—“The action of light must stand in secret interdependence with the action of gravity which the central bodies exercise.”—For, is not the indifference dissolved at every step, since gravity, as ever active, presupposes a continual cancelling of indifference?—It is thus, therefore, that the sun, by the distribution exercised on the earth, causes a universal separation of matter into the primary antithesis (and hence gravity). This universal cancelling of indifference is what appears to us (who are endowed with life) as *light*; wherever, therefore, that indifference is dissolved (in the chemical process), there light *must* appear to us. According to the foregoing, it is *one* antithesis which, beginning at magnetism, and proceeding through electricity, at last loses itself in the chemical phenomena.* In the chemical process, namely, the

* The conclusions which may be deduced from this construction of dynamical phenomena are partly anticipated in what goes before. The following may serve for further explanation:

The chemical process, for example, in its highest perfection is a process of combustion. Now I have already shown on another occasion, that the condition of light in the body undergoing combustion is nothing else but the maximum of its positive electrical condition. For it is always the positively electrical condition that is also the combustible. Might not, then, this coexistence of the phenomenon of light with the chemical process in its highest perfection give us information about the ground of every phenomenon of light in Nature?

What happens, then, in the chemical process? Two whole products gravitate towards each other. The *indifference* of the *individual* is therefore *absolutely* cancelled. This absolute cancelling of indifference puts the whole body into the condition of light, just as the partial in the electric process puts it into a partial condition of light. Therefore, also the light—what

whole product + E or *— E* (the *positively* electric body, in the case of absolutely *unburnt* bodies, is always the *more combustible*;[†] whereas the *absolutely incombustible* is the cause of all *negatively* electric condition;) and if we may be allowed to invert the case, what then are bodies themselves but condensed (confined) electricity? In the chemical process the whole body dissolves into *+ E* or *— E*. Light is everywhere the appearing of the *positive* factor in the primary antithesis; hence, wherever the antithesis is restored, there is *light* for us, because generally only the positive factor is beheld, and the negative one is only felt.—Is the connection of the diurnal and annual deviations of the magnetic needle with light now conceivable—and, if in every chemical process the antithesis is dissolved, is it conceivable that Light is the cause and beginning of all chemical process?[‡]

seems to stream to us from the sun—is nothing else but the phenomenon of indifference cancelled at every step. For as gravity never ceases to act, its condition—antithesis—must be regarded as springing up again at every step. We should thus have in light a continual, visible appearing of gravitation, and it would be explained why, in the system of worlds, it is exactly those bodies which are the principal seat of gravity that are also the principal source of light. We should then, also, have an explanation of the connection in which the action of light stands to that of gravitation.

The manifold effects of light on the deviations of the magnetic needle, on atmospheric electricity, and on organic nature, would be explained by the very fact that light is the phenomenon of indifference continually cancelled—therefore, the phenomenon of the dynamical process continually rekindled. It is, therefore, one antithesis that prevails in all dynamical phenomena—in those of magnetism, electricity and light; for example, the antithesis, which is the condition of the electrical phenomena must already enter into the first construction of matter. For all bodies are certainly electrical.

† Or rather, conversely, the more combustible is always also the positively electric; whence it is manifest that the body which burns has merely reached the maximum of + electricity.

‡ And indeed it is so. What then is the absolute incombustible? Doubtless, simply that wherewith everything else burns—oxygen. But it is precisely this absolutely incombustible oxygen that is the principle of negative electricity, and thus we have a confirmation of what I have already stated in the Ideas for a Philosophy of Nature, viz. that oxygen is a

(f) The dynamical process is nothing but the second construction of matter, and however many stages there are in the dynamical process, there are the same number in the original construction of matter.

This axiom is the converse of axiom e.* principle of a negative kind, and therefore the representative, as it were, of the power of attraction; whereas phlogiston, or, what is the same thing, positive electricity, is the representative of the positive, or of the force of repulsion. There has long been a theory that the magnetic, electric, chemical, and, finally, even the organic phenomena, are interwoven into one great interdependent whole. This must be established. It is certain that the connection of electricity with the process of combustion may be shown by numerous experiments. One of the most recent of these that has come to my knowledge I will cite. It occurs in Scherer's *Journal of Chemistry*. If a Leyden jar is filled with iron filings, and repeatedly charged and discharged, and if, after the lapse of some time, this iron is taken out and placed upon an isolator—paper, for example—it begins to get hot, becomes incandescent, and changes into an oxide of iron. This experiment deserves to be frequently repeated and more closely examined—it might readily lead to something new.

This great interdependence, which a scientific system of physics must establish, extends over the whole of Nature. It must, therefore, once established, spread a new light over the History of the whole of Nature. Thus, for example, it is certain that all geology must start from terrestrial magnetism. But terrestrial electricity must again be determined by magnetism. The connection of North and South with magnetism is shown even by the irregular movements of the magnetic needle. But again, with universal electricity, which, no less than gravity and magnetism, has its indifference point—the universal process of combustion and all volcanic phenomena stand connected.

Therefore, it is certain that there is one chain going from universal magnetism down to the volcanic phenomena. Still these are all only scattered experiments.

In order to make this interdependence *fully* evident, we need the central phenomenon, or central experiment, of which Bacon speaks oracularly—[I mean the experiment wherein all those functions of matter, magnetism, electricity, &c., so run together in one phenomenon that the *individual* function is distinguishable)—proving that the one does not lose itself immediately in the other, but that each can be exhibited separately—an experiment which, when it is discovered, will stand in the same relation to the *whole* of Nature, as galvanism does to organic nature. [Compare this with the discourse on Faraday's latest discovery, (1832,) p. 15. Complete Works, 1st Div., last vol.]

* Proof—All dynamical phenomena are phenomena of transition from difference to indifference. But it is in this very transition that matter is primarily constructed.

That which, in the dynamical process is perceived in the product, takes place *outside* of the product with the simple factors of all duality.

The first start to original production is the limitation of productivity through the primitive antithesis, which, as antithesis (and as the condition of all construction), is distinguished only in *magnetism*; the second stage of production is the *change* of contraction and expansion, and as such becomes visible only in *electricity*; finally, the third stage is the transition of this change into indifference—a change which is recognized as such only in *chemical* phenomena.

MAGNETISM, ELECTRICITY AND CHEMICAL PROCESS are the *categories* of the original construction of nature [matter]—the latter escapes us and lies outside of intuition, the former are what of it remains behind, what stands firm, what is fixed—the general schemes for the construction of matter.†

And—in order to close the circle at the point where it began—just as in organic nature, in the scale of sensibility, irritability, and formative instinct, the secret of the production of the *whole of organic nature* lies in each individual, so in the scale of magnetism, electricity, and chemical process, so far as it (the scale) can be distinguished in the individual body, is to be found the secret of the production of *Nature from itself* [of the whole of Nature‡].

† In the already mentioned discourse on Faraday's latest discovery, the author cites the passage (p. 75, original edition,) as well as § 56 sq. of the *General View of the Dynamical Process* (likewise written before the invention of the voltaic pile,) as a proof of his having anticipated the discoveries which proved the *unity* of the electrical and the chemical antithesis, and of the similar connection subsisting between magnetic and chemical phenomena. (See also Remark 2, p. 216.)

‡ Every individual is an expression of the whole of Nature. As the existence of the *single* organic individual rests on that scale, so does the *whole* of Nature. Organic nature maintains the whole wealth and variety of her products only by continually changing the relation of those three functions.—In like manner inorganic Nature brings forth the whole wealth of her product, only by changing the relation of those three functions of matter *ad infinitum*; for magnetism, electricity, and chemical process are the functions of

C.

We have now approached nearer the solution of our problem, which was: To reduce the construction of organic and inorganic nature to a common expression.

Inorganic nature is the product of the *first power*, organic nature of the *second**—(this was demonstrated above; it will soon appear that the latter is the product of a still higher power)—hence the latter, in view of the former, appears contingent; the former, in view of the latter, necessary. Inorganic nature can take its origin from *simple* factors, organic nature only from products, which again become factors. Hence an inorganic nature generally will appear as having been from all eternity, the organic nature as *originated*.

In the organic nature, indifference can never be arrived at in the same way in which it is arrived at in inorganic nature, because life consists in nothing more than a continual *prevention of the attainment of indifference* [a prevention of the absolute transition of productivity into product] whereby manifestly there comes about only a condition which is, so to speak, extorted from Nature.

By organization, matter—which has already been composed for the second time by the chemical process—is once more thrown back to the initial point of formation (the circle above described is again opened); it is no wonder that matter always thrown back again into formation at last returns as a perfect product.

The same stages, through which the production of Nature originally passes, are also passed through by the production of the organic product; only that the latter, even in the *first stage*, at least begins with products of the *simple* power.—Organic production also begins with limitation, not of the *primary* productivity, but of

matter generally, and on that ground alone are they categories for the construction of all matter. This fact, that those three factors are not phenomena of special kinds of matter, but *functions of all matter universally*, gives its real, and its innermost sense to dynamical physics, which, by this circumstance alone, rises far above all other kinds of physics.

* That is, the organic product can be thought only as subsisting under the hostile pressure of an external nature.

the *productivity of a product*; organic formation also takes place through the change of expansion and contraction, just as primary formation does; but in this case it is a change taking place, not in the simple productivity, but in the compound.

But there is all this, too, in the chemical process,† and yet in the chemical process indifference is attained. The vital process, therefore, must again be a higher power of the chemical; and if the scheme that lies at the base of the latter is duplicity, the scheme of the former will of necessity be *triplicity* [the former will be a process of the third power]. But the scheme of triplicity is [in reality] that [the fundamental scheme] of the galvanic process (Ritter's *Demonstration*, &c., p. 172); therefore the galvanic process (or the process of irritation) stands a power higher than the chemical, and the third element, which the latter lacks and the former has, prevents indifference from being arrived at in the organic product.‡

As irritation does not allow indifference to be arrived at in the individual product, and as the antithesis is still there (for the primary antithesis still pursues us),§ there remains for nature no alternative but separation of the factors in *different* products.|| The formation of the individual product,

† The chemical process, too, has not substanceless or simple factors; it has products for factors.

‡ The same deduction is already given in the Outlines, p. 163.—What the dynamical action is, which according to the Outlines is also the cause of irritability, is now surely clear enough. It is the *universal action* which is everywhere conditioned by the cancellation of indifference, and which at last tends towards intussusception (indifference of products) when it is not continually prevented, as it is in the process of irritation. (Remark of the original.)

§ The abyss of forces, into which we here look down, opens with the one question: In the first construction of our earth, what can have been the ground of the fact that no genesis of new individuals is possible upon it, otherwise than under the condition of opposite powers? Compare an utterance of Kant on this subject, in his *Anthropology*. (Remark of the original.)

|| The two factors can never be *one*, but must be separated into different products—in order that thus the difference may be permanent.

for that very reason, cannot be a completed formation, and the product can never cease to be productive.* The contradiction in Nature is this, that the product must be *productive* [i. e. a product of the third power], and that, notwithstanding, the product, as a product of the third power, must pass over into indifference.†

This contradiction Nature tries to solve by mediating *indifference* itself through *productivity*, but even this does not succeed—for the act of productivity is only the kindling spark of a new process of irritation; the product of productivity is a *new productivity*. Into this as its product the productivity of the *individual* now indeed passes over; the individual, therefore, ceases more rapidly or slowly to be productive, and Nature reaches the indifference-point with it only after the latter has got down to a product of the second power.‡

* In the product, indifference of the first and second powers is arrived at (for example, by irritation itself an origin of *mass* [i. e. indifference of the first order] and even *chemical products* [i. e. indifference of the second order] are reached), but indifference of the third power can never be reached, because it is a contradictory idea. (*Remark of the original.*)

† The product is productive only from the fact of its being a product of the third power. But the idea of a productive product is itself a contradiction. What is productivity is not product, and what is product is not productivity. Therefore a product of the third power is itself a contradictory idea. From this even is manifest what an extremely artificial condition life is—wrenched, as it were, from Nature—subsisting against her will.

‡ Nothing shows more clearly the contradictions out of which life arises, and the fact that it is altogether only a heightened condition of *ordinary* natural forces, than the contradiction of Nature in what she tries, but tries in vain, to reach through the *sexes*.—Nature *hates* sex, and where it does arise, it arises against her will. The diremption into sexes is an inevitable fate, with which, after she is once organic, she must put up, and which she can never overcome.—By this very hatred of diremption she finds herself involved in a contradiction, inasmuch as what is odious to her she is compelled to develop in the most careful manner, and to lead to the summit of existence, as if she did it on purpose; whereas she is always striving only for a return into the identity of the genus, which, however, is chained to the (never to be cancelled) duplicity of the *sexes*, as to an inevitable condition. That she develops the individual only from compulsion, and for the

And now the result of all this?—The condition of the inorganic (as well as of the organic) product, is duality. In any case, however, organic *productive product* is so only from the fact that *the difference NEVER becomes indifference*.

It is [in so far] therefore impossible to reduce the construction of organic and of inorganic product to a *common* expression, and the problem is incorrect, and therefore the solution impossible. The problem presupposes that organic product and inorganic product are mutually *opposed*, whereas the latter is only the *higher power* of the former, and is produced only by the higher power of the forces through which the latter also is produced. Sensibility is only the higher power of magnetism; irritability only the higher power of electricity; formative instinct only the higher power of the chemical process.—But sensibility, and irritability, and formative instinct are all only included in that *one* process of irritation. (Galvanism affects them all).§ But if they are only the higher functions of magnetism, electricity, &c., there must again be a higher synthesis for these in Nature ||—and this, however, it is certain, can be sought for

sake of the genus, is manifest from this, that wherever in a genus she *seems* desirous of maintaining the individual longer (though this is never really the case), she finds the genus becoming more uncertain, because she must hold the sexes farther asunder, and, as it were, make them flee from each other. In this region of Nature, the decay of the individual is not so visibly rapid as it is where the sexes are nearer to each other, as in the case of the rapidly withering flower, in which, from its very birth, they are enclosed in a calyx as in a bride-bed, but in which, for that very cause, the *genus* is better secured.

Nature is the *laziest of animals*, and curses diremption, because it imposes upon her the necessity of activity; she is active only in order to rid herself of this necessity. The opposites must for ever shun, in order for ever to seek, each other; and for ever seek, in order never to find, each other; it is only in *this* contradiction that the ground of all the activity of Nature lies. (*Remark of the original.*)

§ Its effect upon the power of reproduction (as well as the reaction of particular conditions of the latter power upon galvanic phenomena) is less studied still than might be needful and useful.—Vide *Outlines*, p. 177.—(*Remark of the original.*)

|| Compare above *Remark*, p. 197. (*Remark of the original.*)

only in Nature, in so far as, viewed as a whole, it is *absolutely organic*.

And this, moreover, is also the result to which the genuine Science of Nature must lead, viz: that the difference between organic and inorganic nature is only in Nature as object, and that Nature as originally-productive soars above both.*

There remains only one remark, which we may make, not so much on account of its intrinsic interest, as in order to justify what we said above in regard to the relation of our system to the hitherto so-called dynamical system. If it were asked, for instance, in what form our original antithesis, cancelled, or rather fixed, in the product, would appear from the stand-point of reflection, we cannot better designate what is found in the product by analysis,

* That it is therefore the same nature, which, by the same forces, produces organic phenomena, and the universal phenomena of Nature, and that these forces are in a heightened conditioned in organic nature.

than as *expansive* and *attractive* (retarding) *force*, to which then however, gravitation must always be added as the *tertium quid*, whereby those opposites become what they are.

Nevertheless, the designation is valid only for the stand-point of reflection or of *analysis*, and cannot be applied for *synthesis* at all; and thus our system leaves off exactly at the point where the Dynamical Physics of Kant and his successors begins, namely, at the antithesis as it presents itself in the product.

And with this the author delivers over these Elements of a System of Speculative Physics to the thinking heads of the age, begging them to make common cause with him in this science, which opens up views of no mean order, and to make up by their own powers, acquirements and external relations, for what, in these respects, he lacks.

[The notes not marked as "Remarks of the original" are by the German Editor.—*Note of the Translator.*]

A N A L Y S I S O F H E G E L ' S A E S T H E T I C S.

[Translated from the French of M. CH. BENARD, by J. A. MARLING.]

II. SCULPTURE.—Architecture fashions and disposes of the masses of inert nature according to geometric laws, and it thus succeeds in presenting only a vague and incomplete symbol of the thought. Its [thought's] progress consists in detaching itself from physical existence, and in expressing spirit in a manner more in conformity with its nature. The first step which art takes in this career does not yet indicate the return of spirit upon itself, which would render necessary a wholly spiritual mode of expression, and signs as immaterial as thought; but spirit appears under a corporeal, organized living form. What art represents is the animate, living body, and above all the human body, with which the soul is completely identified. Such is the rôle and the place which belong to Sculpture.

It still resembles *architecture* in this, that it fashions extended and solid mate-

rial; but it is distinguished from it in this, that this material, in its hands, ceases to be foreign to spirit. The corporeal form blends with it, and becomes its living image. Compared to poetry, it seems at first to have the advantage over it of representing objects under their natural and visible form, while speech expresses ideas only by sounds; but this plastic clearness is more than compensated by the superiority of language as a means of expression. Speech reveals the innermost thoughts with a clearness altogether different from the lines of the figure, the countenance, and the attitudes of the body; further, it shows man in action—active in virtue of his ideas and his passions; it retraces the various phases of a complete event. Sculpture represents neither the inmost sentiments of the soul, nor its definite passions. It presents the individual character only in general, and